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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/521,732

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Li-Qun Xu

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NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER

BERMAN, MELISSA J

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/521,732	Applicant(s) XU ET AL.	
	Examiner MELISSA J. BERMAN	Art Unit 2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to an AMENDMENT entered 12/07/2007 for the patent application 10/521732 filed on 1/19/2005. The First Office Action of 6/7/2007 is fully incorporated into this Final Office Action by reference. Claims 1-10 have been examined.

Status of Claims

Claims 1, 2, 9 and 10 have been amended by the applicant. Claims 1-10 are examined in this Office Action.

Claim Objections

Response to Arguments

Applicant's arguments, see page 6, with respect to Claim Objections have been fully considered and are persuasive. Applicant argues that dependant claim 8 recites the preferred embodiment and claim 1 more generally recites combining. The objection of the claims has been withdrawn.

Claim Rejections - 35 USC § 101

Response to Arguments

Applicant's arguments, see page 6-7, with respect to 35 U.S.C. 101 has been fully considered and are persuasive. The rejection of the claims under 35 U.S.C. 101 has been withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2129

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5 and 8-10 are rejected under 35 U.S.C. 102(e) as being anticipated by

Gibbon et al. (Pub No.2004/0078188) hereafter referred to as Gibbon.

Claim 1, 8, 9

Gibbon disclosed a method of generating class models of semantically (see e.g.,

[0005]) classifiable data of known classes, comprising the steps of:

for each known class (audio, see e.g. [0030]; [0038]-[0039]):

extracting a plurality of sets of characteristic feature vectors (volume, zero crossing rate, pitch period, feature extraction, see e.g., [0009]; [0037]; [0039]; [0038]-[0080])) from respective portions of a training set of semantically classifiable data of one of the known classes (training vectors, see e.g., [0009]; [0030]; [0081]-[0083]; [0100]); and

combining the plurality of sets of characteristic features into a respective plurality of N-dimensional feature vectors specific to the known class ("feature vector contains 14 chip [sic] level", see e.g., [0081]-[0083], especially where "level" is the dimension);

wherein respective pluralities of N-dimensional feature vectors are thus obtained for each known class ("feature vector contains 14 chip [sic] level", see e.g., [0081]-[0083], especially where "level" is the dimension); the method further comprising:

analysing the pluralities of N-dimensional feature vectors for each known class to generate a set of M basis vectors (target speaker, background speakers and other background audio categories, see e.g., [0094]), each being of N-dimensions, wherein $M \ll N$ (mixtures, see e.g., [0094]); and

for any particular one of the known classes:

using the set of M basis vectors, mapping each N-dimensional feature vector relating to the particular one of the known classes into a respective M-dimensional feature vector (see e.g., [0094], EN: where the audio categories are represented by 64 mixture component Gaussian Mixture Model (GMM) is the M-dimensional feature vector, which is inherently mapped from a basis and feature vector); and

using the M-dimensional feature vectors thus obtained as the basis for or as input to train a class model of the particular one of the known classes (evaluated from models, training models, see e.g., [0084]; [0094])

storing the class model for use in classifying input data that matches the particular one of the known classes (see e.g., [0033] especially where the output is stored in a database and retrieved upon request; [0035] where the models used in the multimedia content indexing and retrieval process are stored in a common database or stored in separate databases).

Claim 2, 10

Gibbon disclosed a method of identifying the semantic class of a set of semantically classifiable data, comprising the steps of:

extracting a plurality of sets of characteristic feature vectors from respective portions of the set of semantically classifiable data (volume, zero crossing rate, pitch period, see e.g., [0038]-[0080]));

combining the plurality of sets of characteristic features into a respective plurality of N-dimensional feature vectors; mapping each N-dimensional feature vector to a respective M-dimensional feature vector, using a set of M basis vectors previously stored, wherein $M \ll N$ ("feature vector contains 14 chip [sic] level", see e.g., [0081]-[0083], especially where "level" is the dimension);

comparing the M-dimensional feature vectors with stored class models respectively corresponding to previously identified semantic classes of data (anchor's speech, detailed reporting, commercials, see e.g., [0089]-[0094], especially [0094] where models are used in target speaker detection; and [0097], where the data is classified into audio events such as anchor's speech, detailed reporting, etc.);

and identifying as the semantic class that class which corresponds to the class model which most matched the M-dimensional feature vectors (anchor's speech, detailed reporting, commercials, see e.g., [0097], where the data is classified into audio events such as anchor's speech, detailed reporting, etc.).

Claim 3

Gibbon disclosed a method according to claim 1, wherein the set of semantically classifiable data is audio data (audio, see e.g., [0005]-[0008]; [0038]).

Claim 4

Gibbon disclosed a method according to claim 1, wherein the set of semantically classifiable data is visual data (visual, see e.g., [0036]).

Claim 5

Gibbon disclosed a method according to claim 1, wherein the set of semantically classifiable data contains audio and visual data (see e.g., [0036]).

Response to Arguments

Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

In Re page 7-8, Applicant argues that the limitation “extracting a plurality of sets of characteristic feature vectors (volume, zero crossing rate, pitch period, feature extraction, see e.g., [0009]; [0037]; [0039]; [0038]-[0080])) from respective portions of a training set of semantically classifiable data of one of the known classes” is not met based on the summary in paragraphs 7 and 9 of Gibbons.

Examiner does not find the Applicant's argument persuasive because Applicant is responsible for reading the entire reference. In reference to the limitation of extraction, see the cited paragraphs in the office action, especially [0100].

In Re page 7-8 Applicant further recites the limitations of claim 1. Applicant is responsible for reading the entire reference. The cited paragraphs in the office action address these limitations.

The rejection of the claims under 35 U.S.C. 102(e) STANDS.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Gibbon** as applied to claim 1-5 and 8-10 above, and further in view of **Baudat et al.** ("Generalized Discriminant Analysis Using a Kernel Approach", 2000) hereafter referred to as **Baudat**.

Claim 6

Gibbon does not specifically disclose a method according to claim 1, wherein the analysing step uses Principal Component Analysis (PCA).

However, **Baudat** teaches a method according to claim 1, wherein the analysing step uses Principal Component Analysis (PCA) (principal component analysis, see e.g., "1. Introduction"; "5.2 Fisher's Iris Data").

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of **Gibbon** with **Baudat**. One would have been

motivated to do so because principal component analysis reduces a multidimensional data set to lower dimensions, making the set more feasible to analyze.

Claim 7

Gibbon does not specifically disclose a method according to claim 1, wherein the analyzing step uses Kernel Discriminant Analysis (KDA).

However **Baudat** teaches a method according to claim 1, wherein the analyzing step uses Kernel Discriminant Analysis (KDA) (see e.g., “3. GDA Formulation in feature space”; “Eigenvalue resolution”; “5.3 Seed Classification” where the generalized discriminant analysis (GDA) employs Gaussian kernel, EN: The GDA uses a kernel approach and although is different in name, it is functionally equivalent).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of **Gibbon** with **Baudat**. One would have been motivated to do so because the GDA with kernels reduces a multidimensional data set to lower dimensions, making the set more feasible to analyze without generalizing the data. The final result will be an exact solution instead of an approximate optimization (**Baudat**).

Response to Arguments

Applicant's arguments with respect to claims 6-7 have been considered but are moot in view of the new ground(s) of rejection.

In Re page 8, Applicant argues Baudat teaches the use of PCA (Principal Component Analysis) and does not solve the deficiencies of the above claims.

Examiner does not find the Applicant's argument persuasive because Applicant is responsible for reading the entire reference. The reference Gibbon teaches the limitations of claim 6 and 7 in combination with reference Baudat.

The rejection of the claims under 35 U.S.C. 103(a) STANDS.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art of record and not relied upon is considered pertinent to the applicant's disclosure.

- Zhang et al (Pub No. 2002/0165837)
- Foote (Patent No. 6542869)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Berman whose telephone number is 571-270-1393. The examiner can normally be reached on 9/4/5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Vincent can be reached on 571-272-3080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Melissa Berman

MB

/David R Vincent/

Supervisory Patent Examiner, Art Unit 2129